U.S. DEPARTMENT OF ENERGY

Office of Science

Biological and Environmental Research

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Biological and Environmental Research

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Secretary of Energy: Dr. Steven Chu

- Nobel Laureate in Physics 1997
- Director of Lawrence Berkeley National Lab (LBNL) since 2004
- Distinguished career at Bell Labs, Stanford, UC-Berkeley
- Helped to launch Bioenergy Research Center at LBNL
- Priorities include biology & biotechnology, climate & environment

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President's National Objectives for DOE—Energy to Secure America's Future

- **Quickly Implement the Economic Recovery Package**
- **Restore Science Leadership**
- **Reduce GHG emissions**
- **Enhance energy security**
- **Enhance Nuclear Security**

Strategic Framework: Science and Discovery at the Core

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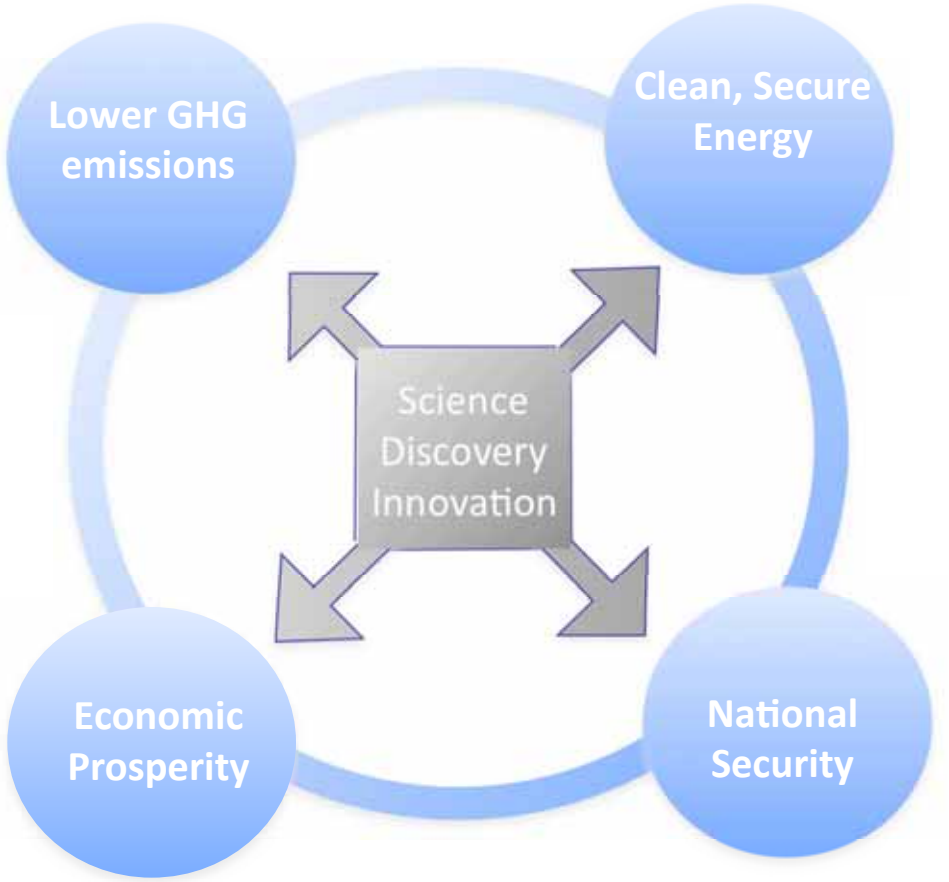

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Priority : Science and Discovery
"Invest in science to achieve transformational discoveries"

- **Focus on transformational science —scientific breakthroughs**
- **Develop science and engineering talent**
- **Collaborate universally**

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Other DOE Leadership Positions

- Dr. Steve Koonin has been nominated as Under Secretary of Science
- Dr. Kristina Johnson has been nominated as Under Secretary
- Dr. Pat Dehmer is acting as Director of Office of Science and continues as Deputy Director of Science Programs

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ENERGY
LEADING BASIC RESEARCH
FOR A SUSTAINABLE FUTURE

ENVIRONMENT
UNDERSTANDING CLIMATE CHANGE AND
IMPROVING THE ENVIRONMENT

INNOVATION
BUILDING RESEARCH INFRASTRUCTURE AND
PARTNERSHIPS THAT FOSTER INNOVATION

DISCOVERY
UNRAVELING NATURE'S
DEEPEST MYSTERIES

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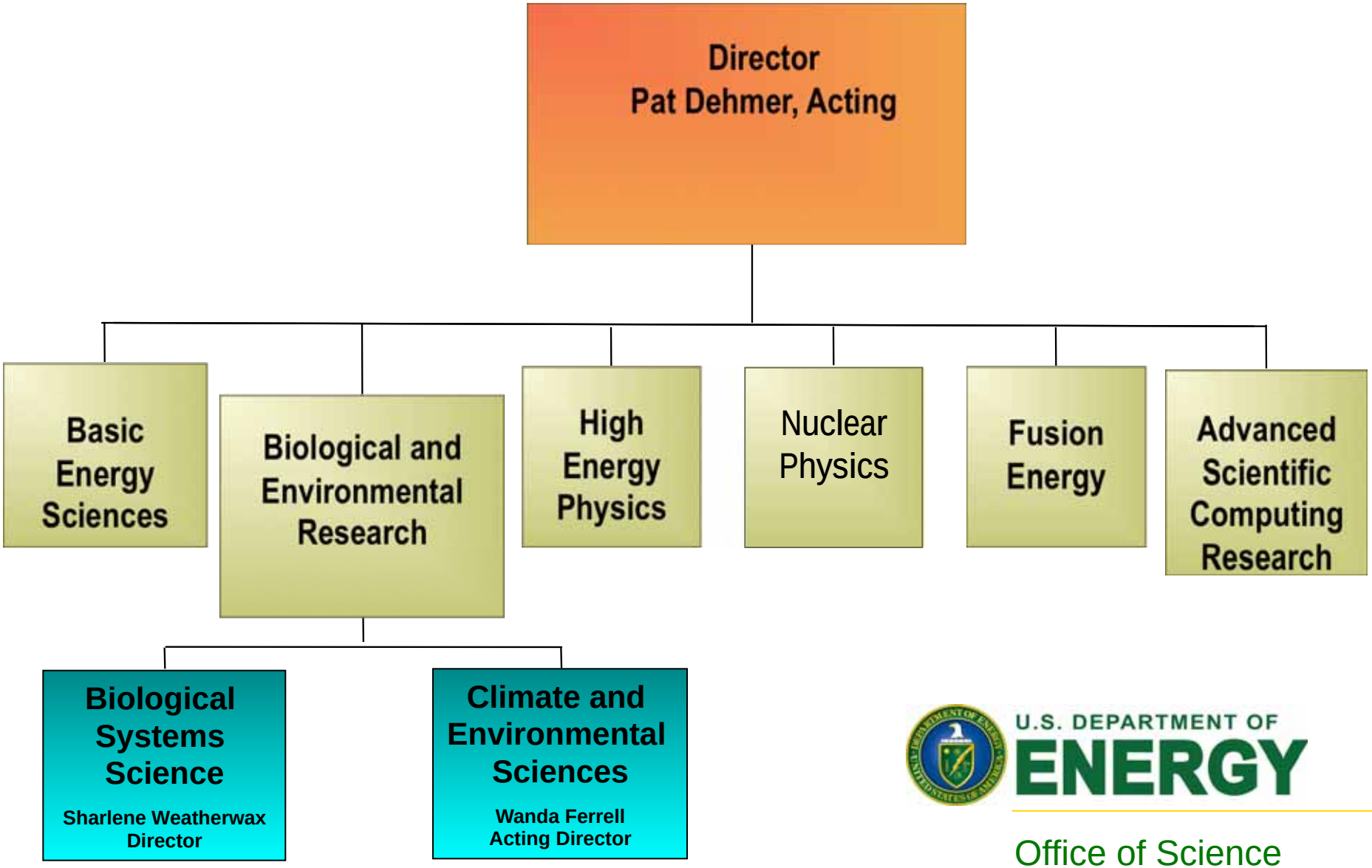

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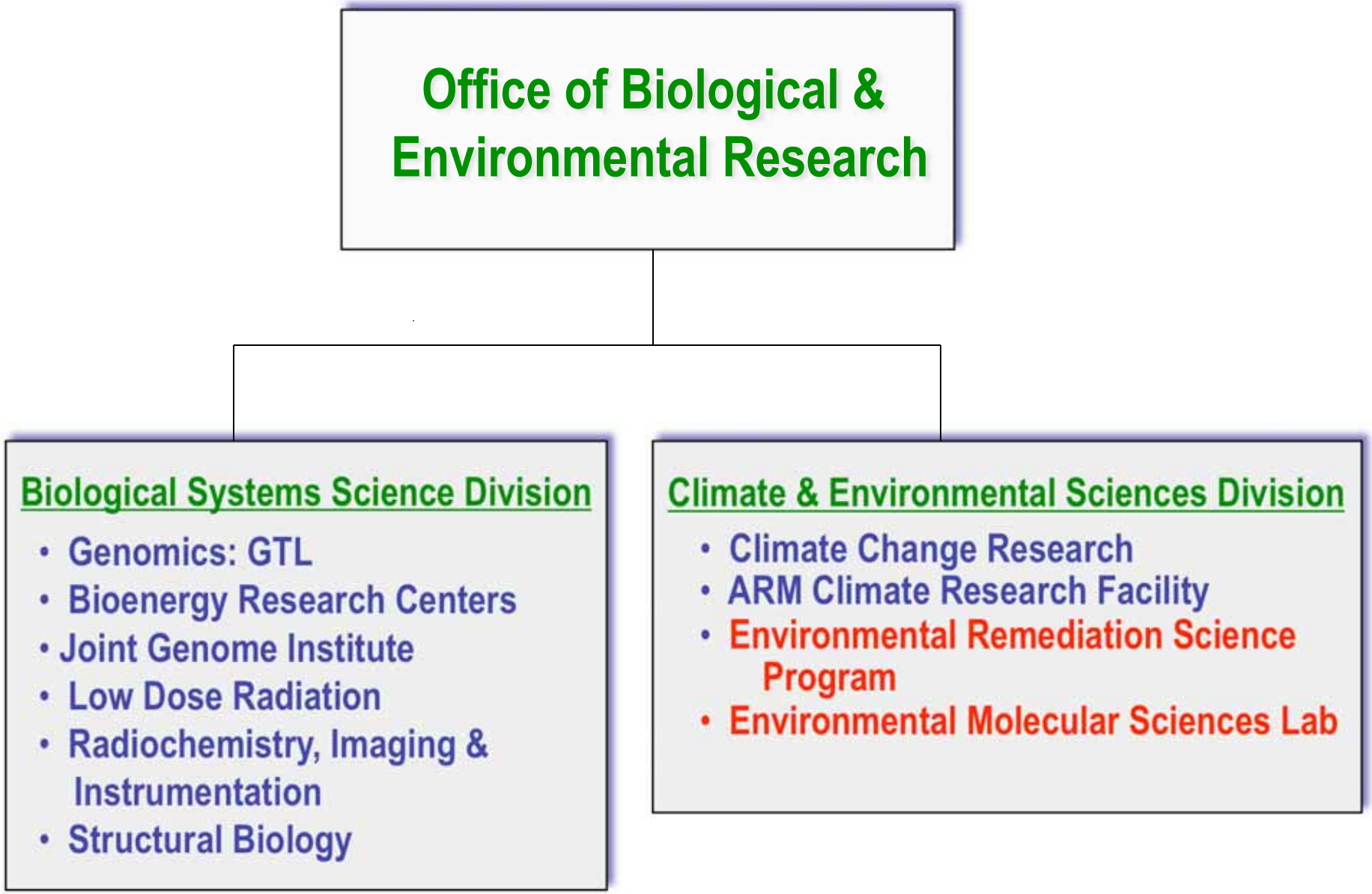
Office of Biological & Environmental Research
Biological Systems Science Division
• Genomics: GTL
• Bioenergy Research Centers
• Joint Genome Institute
• Low Dose Radiation
• Radiochemistry, Imaging & Instrumentation
• Structural Biology
Climate & Environmental Sciences Division
• Climate Change Research
• ARM Climate Research Facility
• Environmental Remediation Science Program
• Environmental Molecular Sciences Lab

Biological and Environmental Research

(million $)

	FY 2008 Appropriation	FY 2009 Appropriation
Research		
Biological Systems	167	173
Bioenergy Research Centers	75	75
Climate Change Research	98	132
Environmental Remediation Science	47	49
Total, Research	**387**	**429**
Facilities		
Scientific User Facility Operations		
Environ.Molecular Sciences Lab (EMSL)	43	49
Production Genomic Facility (JGI)	60	65
Atmospheric Radiation Measurement (ARM)	35	40
Total, Facilities	**138**	**154**
Other (e.g. SBIR)	19	17
Total, BER	**544**	**600**

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American Recovery and Reinvestment Act (a.k.a. "The Stimulus")

- The focus of the stimulus is on infrastructure and construction rather than operations and multi-year research.
- DOE's Office of Science received $1.6B
- Primary focus is on infrastructure, some research
- Thus far, BER has had two ARRA projects approved:
  - $60M for Environmental Molecular Sciences Lab (EMSL)
  - $60M for Atmospheric Radiation Measurement Climate Research Facility
- Paul Bayer is leading ARRA effort for BER

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Mission-Inspired Science

BER advances world-class biological and environmental research and scientific user facilities to support DOE's energy, environment, and basic research missions.

- **Develop biofuels as a major secure sustainable national energy resource;**
- **Understand the potential effects of greenhouse gas emissions on Earth's climate and biosphere, and their implications for our energy future;**
- **Predict the fate and transport of contaminants in the subsurface environment at DOE sites; and**
- **Develop new tools to explore the interface of biological and physical sciences.**

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The BER Approach

- **Understanding <u>complex</u> biological and environmental systems across many spatial and temporal scales:**

  from the sub-micron to the global,
  from individual molecules to ecosystems,
  from nanoseconds to millenia.

- **Integrating science with tight coupling between theory, observations, experiments, models and simulations**
- **Supporting interdisciplinary research to address critical National needs.**
- **Engaging national laboratories, universities, and the private sector to generate the best possible science.**

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Environmental Remediation Sciences Program

- Providing an excellent example of a BER “Complex Systems” approach to science in a DOE mission critical area.
- Focusing on the fundamental science linking processes across biogeochemical phenomena scales to explain influencing contaminant transport in the environment.
- Leading BER during implementation of the National Laboratory SFA programs and Integrating University and DOE Lab research
- Embarking on a new Strategic Planning effort led by David Lesmes

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Thank you!

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